The temporal integration of information during anticipation

Oliver R. Runswick, University of Chichester, UK; André Roca, St Mary's University, UK; A. Mark Williams, University of Utah; Allistair P. McRobert, Liverpool John Moores University, UK; Jamie S. North, St Mary's University, UK

When performing actions under severe time pressure, the ability to accurately anticipate is vital to performance. Skilled anticipation is underpinned by the use of both kinematic cues and contextual information. However, there have been few published reports examining how, and when, these two sources interact during anticipation. In this study, 18 skilled and 18 less-skilled cricket batters anticipated deliveries from bowlers in a video-based simulation task where the footage was occluded at four time points relative to ball release. Participants rated the importance of each source of information when making their judgements at each occlusion point. Skilled batters anticipated the deliveries significantly more accurately than the less-skilled group at all occlusion points including when no kinematic information was available ($p < 0.05$). The skilled group judged the use of contextual information to be more important to anticipation than the less-skilled group. Kinematic cues were only considered important to anticipation in the final moments of the bowling sequence (i.e., immediately prior to ball release), whereas contextual information was used throughout the action, albeit mostly by the skilled group. Findings enhance our understanding of the processes underpinning anticipation and present implications for the design of training programs to improve anticipation.